REMARKS

The present response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Claims 1-42 are pending in this case. Claims 1-20 have been withdrawn as drawn to a non-elected species. Claims 21-42 have been rejected under 35 U.S.C. § 103(a). New claims 43-44 have been added.

With respect to the Examiner's 35 U.S.C. § 103(a) rejections, Applicant has reviewed the cited art and respectfully submits that the art fails to disclose or suggest the Applicant's claimed invention. Therefore, Applicant respectfully traverses and requests favorable reconsideration.

Telephonic Interview

Applicant wishes to thank the Examiner for granting a telephonic interview on December 3, 2004. The interview participants included Examiner Shi K. Li and Howard Zaretsky (Applicant's representative).

Response to 35 U.S.C. § 103(a) Rejections

The Examiner rejected claims 21-42 under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art in view of U.S. Patent No. 6,476,945 ("Archambault") in further view of U.S. Patent No. 6,616,348 ("Barnard").

Archambault teaches a method of wavelength allocation that allows creating a fully meshed network at the optical layer when the nodes are connected at the physical layer in a ring. The method uses a minimum number of wavelengths and a same wavelength set on each fiber, with the constraint that a wavelength is used at most once on any resource. A hop table is prepared with all nodes and all wavelengths and the origin of the table is defined by a first node and a first wavelength. All hops for all nodes and all wavelengths are then generated using the initial hop vector, and recorded in the hop table. After the hop table is completed, the nodes are equipped with wavelength-specific receivers and transmitters according to a source-destination table prepared from the hop table.

Barnard teaches a method for operating a redundant optical communication network having at least two network transmission paths, the first and second protection protocols are assigned to switched signals and secondary signals respectively, adds and drops the switched signals and secondary signals on the at least two network transmission paths, makes the switched signals and the

15

secondary signals to counter-propagate along the at least two network transmission paths, thereby allowing the redundant optical communication network to support different data types and different protection mechanisms.

It is submitted that although Archambault teaches node to node communications as shown in Figure 1, it fails to teach the deployment and configuration of OADMs and MACs taught by the present invention. The node to node communications can, in fact, be provided using the prior art optical ring network scheme of Figure 2 of the present invention which shows a prior art MAC transmission scheme in which the add and drop modules within the OADMs are deployed in a linear tandem configuration in line with each ring direction. Each OADM has its own MAC associated with it whereby the Tx and Rx of each MAC is connected to the drop and add modules within an individual OADM.

It is submitted that the node to node communications of Figure 1 of Archambault can be achieved using the prior art scheme of Figure 2 of the present invention since Archambault does specifically mention or teach providing or how to connect OADMs and MACs within each node. With reference to the respective figures and considering nodes A and B as nodes 'n' and 'n-1' respectively, communications over one ring passes comprises the Tx of MAC 60, add module 36, fiber 46, drop module of left OADM in node B, Rx of MAC 61. In the opposite direction, communications comprises Tx of MAC 63, add module of right OADM of node B, fiber 48, drop module of 40, Rx of MAC 49.

Although this scheme achieves the direct node to node communications of Figure 1 of Archambault, it requires 4 MACs and 4 OADMs to accomplish. This is a major disadvantage of Archambault. Note that Archambault does not disclose anything about the number or configuration of OADM and MAC units within the nodes.

In contrast, the present invention teaches a novel method of configuring, deploying and connecting OADMs and MACs within each node so as to enable true direct MAC to MAC communications. Direct MAC to MAC communications is defined as communication between two MAC units wherein the Tx of one MAC communicates with the Rx of the other MAC and vice versa, regardless of any intermediary nodes. This is achieved in the present invention by deploying the drop and add modules of each OADM **across** the two optical rings rather than in line with the ring, combined with providing MAC units and connecting them to the OADMs such that the Rx and Tx of each MAC is connected to and add and drop module not located on the same ring. In other words, the Rx of a MAC is coupled to the drop module situated on one ring while the Tx of that MAC is coupled to the add module of a drop module located on the ring traveling in the opposite

16

direction. This feature is neither taught nor suggested by the references cited by the Examiner, namely the Archambault and Barnard references. Note that the 'packaging' of the drop and add modules is not critical to the invention, meaning whether the drop and add modules are packaged inline with each ring (as shown in Figure 3) or across rings (as shown in Figure 4). In either case, the Tx and Rx of each MAC is connected to drop and add modules situated <u>across</u> the rings and not inline with the ring as taught by the prior art.

It is noted that the objective of the present invention is to enable direct MAC to MAC communications and not simply to shorten transmission paths or to teach organizing add and drop modules such that modules for fibers on the left side are organized in one OADM and modules for fibers are organized in a second OADM. It is submitted that Barnard does not teach this as asserted by the Examiner in the Office Action. Barnard teaches a single OADM for handling a portion of the traffic (i.e. switched traffic) and a plurality of optical circulators for handling the remainder of the traffic (i.e. unswitched) traffic. Barnard does not teach using separate OADMs and in addition, does not mention anything about the use of MACs or their placement and configuration.

Prior art communications such as in prior art Figure 2 of the present invention are not symmetrical. The MACs cannot communicate in both directions with each other. In order for MAC to MAC communications to occur around the ring, even though indirectly, the wavelengths from hop to hop must be preserved. This prevents the efficient re-use of wavelengths when a signal is dropped at a node. Due to the prior art configuration of the OADMs and MACs, the signal from a MAC must traverse the entire ring back to the neighboring node thus locking up the particular wavelength and preventing wavelength re-use.

Additionally, the scheme of Barnard teaches using fibers that carry bi-directional optical signals between nodes. Referring to Figure 1 of Barnard, fibers 5 and 6 both carry optical signals in both directions with OADM1 being in one node and OADM2 situated in a neighboring second node. The circulators 1, 2, 3, 4 are used to add, drop and separate the unswitched traffic (solid wave signal) from the switched traffic (dashed wave signal). In contrast, the present invention teaches unidirectional communications over each fiber ring which is significantly different than transmitting two signals in opposite directions over the same optical fiber.

Applicant respectfully submits that the Examiner has failed to show that one of ordinary skill in the art would have been motivated to modify the admitted prior art Figure 2 in view of Archambault and Barnard to arrive at the claimed invention because there is no suggestion made by the admitted prior art Figure 2, Archambault or Barnard to couple the Rx and Tx of each MAC to drop and add modules located across the optical rings rather than in line with the ring.

17

Applicant submits that Examiner has not made a *prima facie* case of obviousness. The teaching or suggestion to make the claimed combination must be found in the prior art, not in Applicant's disclosure (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Applicant therefore submits that independent claims 21, 31, 41-44 are allowable and requests favorable reconsideration. Because admitted prior art, Archambault and Barnard do not anticipate or suggest claims 21, 31, 41-44 as discussed above, then claims 22-30, 32-40 are allowable as well. The Examiner is respectfully requested to withdraw the rejection based on § 103(a).

New Claims

New claims 43-44 have been added. Support for the new claims may be found throughout the specification and drawings as filed in this application. In particular, reference may be made to page 5, line 1 through page 26, line 20 and the Figures references therein. No new matter has been added.

Correction of Typographical Errors

Amendments haven been made to correct grammatical and usage errors in the specification. No new matter has been added to the application by these amendments.

Conclusion

In view of the above amendments and remarks, it is respectfully submitted that independent claims 21, 31, 41-44 and hence dependent claims 22-30, 32-40 are now in condition for allowance. Prompt notice of allowance is respectfully solicited.

In light of the Amendments and the arguments set forth above, Applicant earnestly believes that they are entitled to a letters patent, and respectively solicit the Examiner to expedite prosecution of this patent applications to issuance. Should the Examiner have any questions, the Examiner is encouraged to telephone the undersigned.

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Respectfully submitted,

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18